

**REMARKS**

**Rejections under 35 USC §103(a)**

**Claims 3, 4 and 9-14 were rejected under 35 USC §103(a) as being obvious over Hirozawa et al. (JP 62-074048) and Kaino et al. (JP 01-117303) in view of Makita et al. (JP 2001-135511), Nishiuchi et al. (U.S. Patent No. 6,861,089), Kadokura et al. (U.S. Patent No. 4,784,739), Kamiya (JP 2000-319778) and Wang et al. (U.S. Patent No. 6,837,975).**

Claim 3 has been amended to recite “placing the electrode wire between oppositely-disposed targets in the tank, wherein the oppositely-disposed targets are ring-shaped targets disposed concentrically with respect to the center axis of the cylindrical or disc-shaped magnet, the electrode wire extending and being fixed on a rotation shaft of a motor located outside of one of the ring-shaped targets.”

The Office Action admitted that Hirozawa and Kaino do not disclose:

- a. the shape of the magnet, the surface to volume ratio of the magnet, or inserting an electrode wire into the hole of the magnet, or loading the magnet into a wire basket,
- b. oppositely disposed **ring-like targets**,
- c. making the magnet electrically negative through the electrode wire.

(Office Action page 2).

However, claim 3, as amended, also recites “placing the electrode wire **between oppositely-disposed targets** in the tank, wherein **the oppositely-disposed targets are ring-shaped targets disposed concentrically with respect to the center axis of the cylindrical or**

**disc-shaped magnet, the electrode wire extending and being fixed on a rotation shaft of a motor located outside of one of the ring-shaped targets.”**

Then pointing out what is disclosed in each of the prior art references, the Office Action concludes as follows:

Regarding Claims 3 and 9, it would have been obvious to one of ordinary skill in the art that the process of diffusing a layer of rare earth metal on a rare earth permanent magnet that had been damaged by cutting or grinding as suggested by Hirozawa and Kaino, the permanent magnet with the dimensions as suggested by Makita, wherein the coating was deposited using the vapor deposition device of Nishiuchi improves the magnetic characteristic (BH)<sub>max</sub>, therefore it is result effective and can be optimized through routine experimentation in order to recover the (BH)<sub>max</sub> value to 280 RJ/m<sup>3</sup> or more. Also, the space created between the oppositely disposed targets would inherently allow the metal particles to fly three-dimensionally to deposit onto all sides of the magnet.

(Office Action page 5).

The Office Action alleges about Nishiuchi as follows:

Nishiuchi discloses a **vapor deposition apparatus** comprising a vacuum chamber, an evaporating section for evaporating material, and a holding member for rare earth permanent magnets (Col. 3, lines 12-19 and Col. 4, lines 5-7). The holding member may consist of cylindrical stainless steel mesh barrels in which the magnets may tumble (Col. 6, lines 44-50) or the **holding member may be a structure which can hold hanging ring-shaped magnets** (Fig. 6, Col. 10, lines 28-34). The open area of the mesh barrels depends on the size and shape of the magnets (Col. 9, lines 65-67). The vapor deposition apparatus is used to deposit a coating onto the magnets wherein the coating applied is uniform.

(Office Action page 4). Thus, Nishiuchi is alleged to disclose a **vapor deposition apparatus**.

Nishiuchi describes about the jig shown in Fig. 6 as follows:

As an example of such an apparatus, there can be presented one in which a jig shown in FIG. 6 is used instead of the cylindrical barrel in

the apparatus shown in FIG. 1. Namely, there can be presented an apparatus in which hanger members 160 are revolvably supported **circumferentially outside the rotary shaft 156** of the support member 157 that is made rotatable about the rotary shaft 156 on the horizontal rotational axis. The hanger members 160 are provided as holding members for hanging work pieces 190, each with a center opening, such as ring-shaped magnets. By rotating the support member 157, the hanger members 160 are made revolved about the rotary shaft 156 of the support member 157.

(Nishiuchi, column, 10, lines 24-36, emphasis added).

Thus, in Nishiuchi, **an electrode wire** is not inserted into the hole of the cylindrical or disc-shaped magnet. Moreover, according to the jig of Nishiuchi, ring-shaped targets **cannot be disposed concentrically** with respect to the center axis of the cylindrical or disc-shaped magnet because the hanger members 160 are supported **circumferentially outside the rotary shaft 156** of the support member 157.

The Office Action further alleged as follows: “Kamiya (‘778) discloses using oppositely-disposed ring-like targets in a sputtering process to form a high quality thin film at a high speed (Abstract).” However, in Kamiya, the substrate 3 to be coated is disposed outside of the two ring shaped targets 7a, 7b. The electrode wire is not placed **between** oppositely-disposed targets. Also, the ring-shaped targets are not disposed concentrically with respect to the center axis of the **cylindrical or disc-shaped magnet**.

Thus, Hirozawa, Kaino, Makita, and Nishiuchi do not teach or suggest, among other things, “placing the electrode wire between oppositely-disposed targets in the tank, wherein the oppositely-disposed targets are ring-shaped targets disposed concentrically with respect to the center axis of the cylindrical or disc-shaped magnet, the electrode wire extending and being fixed

on a rotation shaft of a motor located outside of one of the ring-shaped targets,” as recited in claim 3.

For at least these reasons, claim 3 patentably distinguishes over Hirozawa, Kaino, Makita, and Nishiuchi.

Kadokura is cited for allegedly disclosing a method for depositing a thin film onto a substrate by opposed target type sputtering to produce a uniform thin film at a high deposition rate. Wang is cited for allegedly disclosing that when sputtering, the wafer pedestal may be made electrically negative to accelerate the positive metal ions so that they not only strike the top planar surface of the substrate, but also reach deep within the hole in the substrate to coat the bottom and side walls of the hole. However, such disclosures of Kadokura and Wang do not remedy the deficiencies of Hirozawa, Kaino, Makita, and Nishiuchi.

Therefore, claims 4, 11, 12, depending from claim 3 patentably distinguish over Hirozawa, Kaino, Makita, Nishiuchi, Kadokura and Wang.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants’ undersigned attorney to arrange for an interview to expedite the disposition of this case.

Application No.: 10/551,432  
Art Unit: 1762

Amendment under 37 C.F.R. §1.111  
Attorney Docket No.: 053087

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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